

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended): An electro-optical ~~Electro-optical~~ light modulation element comprising:

- a substrate or a plurality of substrates,
- an electrode arrangement,
- at least one element or a plurality of elements for polarisation of ~~the~~ light, and
- a mesogenic modulation medium,

wherein ~~characterised in that~~

- ~~said the~~ light modulation element can be ~~is~~ operated at a temperature at which ~~said the~~ modulation medium is in an optically isotropic phase in the unaddressed state, ~~and in that~~
- ~~said the~~ electrode arrangement can generate an electric field having a significant component parallel to the surface of ~~said the~~ mesogenic modulation medium, ~~and in that~~
- ~~said the~~ mesogenic modulation medium satisfies at least one of the following ~~following~~ conditions (a) and (f) and, in the case where said medium ~~it~~ only satisfies condition (a) of these two conditions (a) and (f), said medium ~~it~~ additionally satisfies at least one of the following conditions (b) and (c) and, in the case where said medium ~~it~~ only satisfies condition (c) of conditions (b) and (c), said medium ~~it~~ satisfies at least one of the two further following conditions (d) and (e), and, in the case where said medium ~~it~~ satisfies condition (f), said medium ~~it~~ optionally additionally satisfies condition (g),
- (a) ~~said the~~ modulation medium has, with increasing temperature, a transition from the nematic phase or from the cholesteric phase into the isotropic phase at a clearing point ( $T(N,I)$  or  $T(N^*,I)$ ), and the dielectric susceptibility of ~~said the~~ modulation medium at a temperature of 4 degrees above the clearing point is 25 or more,
- (b) the enthalpy of clearing of ~~said the~~ modulation medium is 0.78 J/g or less, or
- (c) the enthalpy of clearing of ~~said the~~ modulation medium is 1.50 J/g or less, and
- (d) the dielectric susceptibility of ~~said the~~ modulation medium at a temperature of 4 degrees above the clearing point is 27 or more, with the

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proviso that light modulation elements containing modulation media which comprise 8%, 10% or 12% of compound UVZG-3-N are excluded, or

- (e) the dielectric susceptibility of said ~~the~~ modulation medium at a temperature of 4 degrees above the clearing point is 35.5 or more, with the proviso that light modulation elements containing modulation media having one of the two following compositions 1 and 2

Composition 1			Composition 2		
Compound #	Abbreviation	Conc. / %	Compound #	Abbreviation	Conc. / %
1	UZU-3A-N	12.0	1	UM-3-N	10.0
2	UZU-5A-N	12.0	2	PYP-3N.F.F	15.0
3	GZU-3A-N	12.0	3	UZU-3A-N	12.0
4	GZU-4A-N	11.0	4	GZU-3A-N	12.0
5	GZU-4O-N	10.0	5	GZU-4-N	1.0
6	UVZG-3-N	10.0	6	GZU-4O-N	10.0
7	CUZU-2-N	10.0	7	UVZG-3-N	10.0
8	CUZU-3-N	10.0	8	CUZU-2-N	10.0
9	CUZU-4-N	10.0	9	CUZU-3-N	10.0
10	HP-5N.F	3.0	10	HP-3N.F	10.0

are excluded, where the abbreviations for the compounds are as defined in the application text,

- (f) ~~(g)~~ said ~~the~~ modulation medium has, with increasing temperature, a transition from the cholesteric phase (~~Ch, here referred to as the chiral-nematic phase N\*~~) into a blue phase (BP) at a transition temperature  $T(N^*,BP)$ , and
- (g) ~~(h)~~ the dielectric susceptibility of said ~~the~~ modulation medium at a temperature of 4 degrees above ~~this~~ said transition temperature ( $T(N^*,BP)$ ) is 25 or more.

2. (Currently Amended): A light ~~Light~~ modulation element according to Claim 1, wherein characterised in that the enthalpy of clearing of said ~~the~~ mesogenic modulation medium is 1.10 J/g or less.

3. (Currently Amended): A light ~~Light~~ modulation element according to Claim 2, wherein characterised in that the enthalpy of clearing of said ~~the~~ mesogenic modulation medium is 0.70 J/g or less.

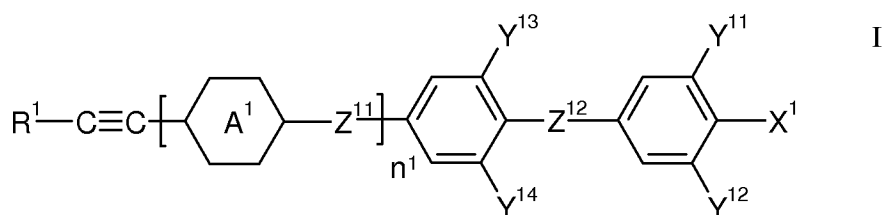
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4. (Currently Amended): A light ~~Light~~ modulation element according to claim 1, wherein characterised in that the dielectric susceptibility of said ~~the~~ modulation medium at a temperature of 4 degrees above the clearing point or transition temperature (T(N\*,BP) is 40 or more.

5. (Currently Amended): A light ~~Light~~ modulation element according to Claim 4, wherein characterised in that the dielectric susceptibility of said ~~the~~ modulation medium at a temperature of 4 degrees above the clearing point or transition temperature (T(N\*,BP) is 55 or more.

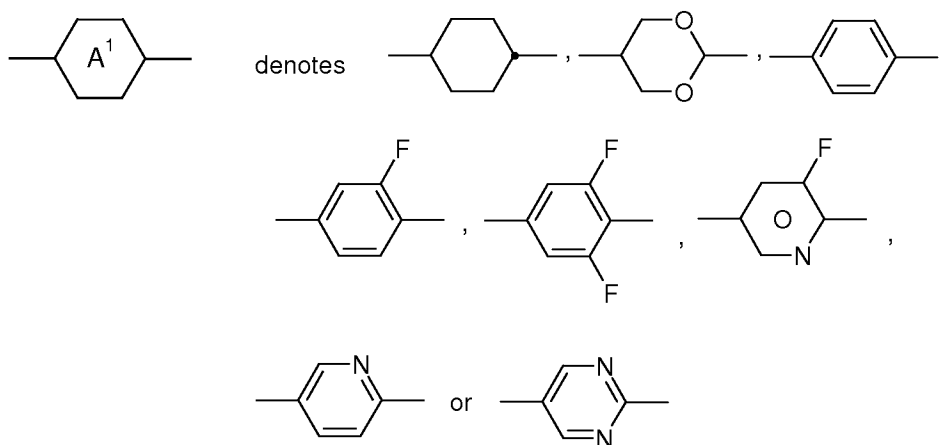
6. (Currently Amended): A light ~~Light~~ modulation element according to claim 1, wherein characterised in that the optical anisotropy of said modulation medium at a temperature of 4 degrees below the clearing point or transition temperature (T(N\*,BP) is 0.080 or more.

7. (Currently Amended): A light ~~Light~~ modulation element according to claim 1, wherein said ~~characterised in that~~ the mesogenic modulation medium comprises one or more compounds selected from of the formula I and formula II:



wherein in which

R<sup>1</sup> denotes alkyl having 1 to 7 C atoms or oxaalkyl having 2 to 7 C atoms,

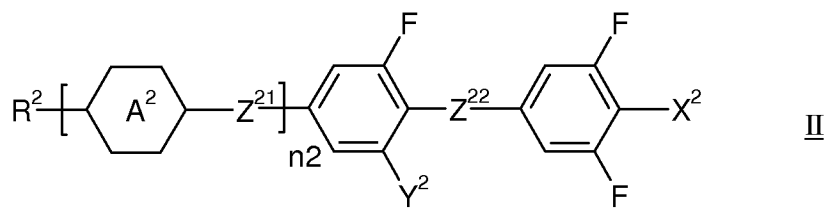


$Z^{11}$  and  $Z^{12}$  each, independently of one another, denote a single bond,  $-\text{CO}-\text{O}-$ ,  $\text{trans } -\text{CH}=\text{CH}-$ ,  $-\text{CH}=\text{CF}-$ ,  $-\text{CF}=\text{CH}-$ ,  $-\text{CF}=\text{CF}-$ ,  $-\text{CH}=\text{CH}-\text{CO}-\text{O}-$ ,  $-\text{CF}=\text{CF}-\text{CO}-\text{O}-$ ,  $-\text{CF}=\text{CH}-\text{CO}-\text{O}-$ ,  $-\text{CH}=\text{CF}-\text{CO}-\text{O}-$ ,  $-\text{CF}_2-\text{O}-$ ,  $-\text{O}-\text{CF}_2-$  or  $-\text{C}\equiv\text{C}-$  or a combination of two or more of these groups,

$X^1$  denotes F, Cl,  $\text{NO}_2$ ,  $-\text{OCF}_3$ ,  $-\text{CF}_3$ ,  $-\text{OCF}_2\text{H}$ , Cl, CN,  $-\text{C}\equiv\text{C}-\text{CN}$  or NCS,

$Y^{11}$ ,  $Y^{12}$ ,  $Y^{13}$  and  $Y^{14}$  each, independently of one another, denote H or  $\text{F}_2$  and

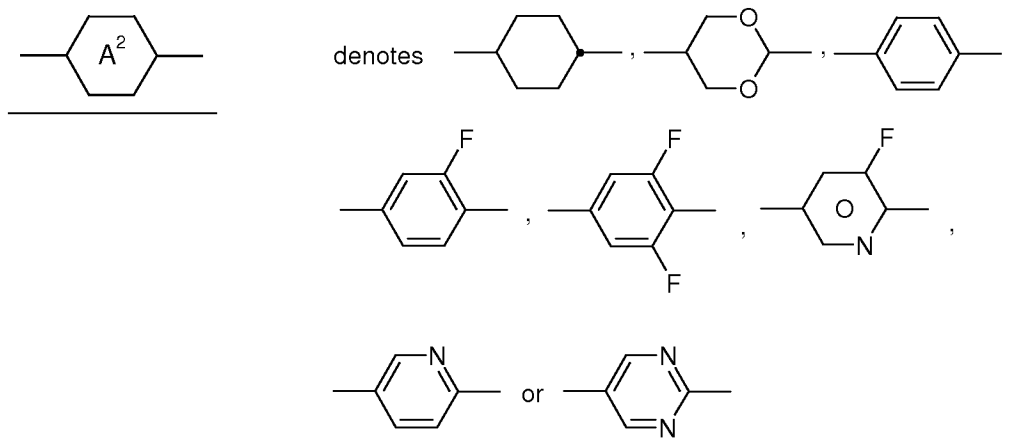
$n^1$  denotes 0 or 1;



wherein

$R^2$  denotes alkyl having 1 to 7 C atoms, alkoxy having 1 to 7 C atoms, alkenyl having 2 to 7 C atoms, alkenyloxy having 2 to 7 C atoms, or oxaalkyl having 2 to 7 C atoms,

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$Z^{21}$  and  $Z^{22}$  each, independently of one another, denote a single bond,  $-\text{CO}-\text{O}-$ ,  $\text{trans}-\text{CH}=\text{CH}-$ ,  $-\text{CH}=\text{CF}-$ ,  $-\text{CF}=\text{CH}-$ ,  $-\text{CF}=\text{CF}-$ ,  $-\text{CH}=\text{CF}-\text{CO}-\text{O}-$ ,  $-\text{CF}_2-\text{O}-$ ,  $-\text{O}-\text{CF}_2-$ , or  $-\text{C}\equiv\text{C}-$ , or a combination of two or more of these groups,

$X^2$  denotes F, Cl,  $\text{NO}_2$ ,  $-\text{OCF}_3$ ,  $-\text{CF}_3$ ,  $-\text{OCF}_2\text{H}$ , Cl, CN,  $-\text{C}\equiv\text{C}-\text{CN}$  or NCS,

$Y^2$  denotes H or F, and

$n^2$  denotes 0 or 1.

8. (Cancelled):

9. (Currently Amended): A light ~~Light~~ modulation element according to claim 7 ~~4~~, wherein said ~~characterised in that~~ the medium, besides the compounds of the formulae I and/or II, comprises one or more further mesogenic compounds.

10. (Currently Amended): A light ~~Light~~ modulation element according to claim 7 ~~4~~, wherein said ~~characterised in that~~ the mesogenic modulation medium comprises:  
 5% to 80 of one or more compounds of the formula I, and/or  
 5% to 95% of one or more compounds of the formula II, and ~~and/or~~  
 0% to 30% of one or more further mesogenic compounds.

11. (Currently Amended): An electro-optical ~~Electro-optical~~ display containing one or more light modulation elements according to claim 1.

12. (Currently Amended): An electro-optical ~~Electro-optical~~ display according to

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Claim 11, wherein said ~~characterised in that~~ the display is addressed by means of an active matrix.

13. (Currently Amended): An electro-optical ~~Electro-optical~~ display system containing one or more electro-optical displays according to claim 11.

14. (Currently Amended): An electro-optical ~~Electro-optical~~ display system according to Claim 13, wherein said system ~~characterised in that~~ it can be used as a television screen, as a computer monitor, or as both.

15. (Currently Amended): In a method of displaying information using ~~Use of a~~ light modulation element, the improvement wherein said element is an element according to claim 1 ~~for the display of information~~.

16. (Currently Amended): In a method of generating an electro-optical display using ~~Use of an electro-optical display according to claim 11 in an electro-optical display system,~~ the improvement wherein said system is a system according to claim 13.

17. (Currently Amended): A method according to claim 16, wherein said system displays ~~Use of an electro-optical display system according to claim 13 for the display of~~ video signals or digital signals.

18. (Currently Amended): A medium which ~~Medium, characterised in that it~~ satisfies either the following condition (a) or condition (d), and if condition (a) is satisfied ~~than and at least one of the two further following conditions (b) and (c) is also satisfied:~~

- (a) the medium has, with increasing temperature, a transition from the nematic phase or from the cholesteric phase into the isotropic phase ( $T(N,I)$  or  $T(N^*,I)$ ), and the enthalpy of clearing of the medium is 1.50 J/g or less, and
- (b) the dielectric susceptibility of the medium at a temperature of 4 degrees above the clearing point is 27 or more, with the proviso that media which comprise 8%, 10% or 12% of compound UVZG-3-N are excluded, or
- (c) the dielectric susceptibility of the medium at a temperature of 4 degrees above the clearing point is 35.5 or more, with the proviso that media having one of the two following compositions 1 and 2

Composition 1			Composition 2		
Compound		Conc. / %	Compound		Conc. / %
#	Abbreviation		#	Abbreviation	
1	UZU-3A-N	12.0	1	UM-3-N	10.0
2	UZU-5A-N	12.0	2	PYP-3N.F.F	15.0
3	GZU-3A-N	12.0	3	UZU-3A-N	12.0
4	GZU-4A-N	11.0	4	GZU-3A-N	12.0
5	GZU-4O-N	10.0	5	GZU-4-N	1.0
6	UVZG-3-N	10.0	6	GZU-4O-N	10.0
7	CUZU-2-N	10.0	7	UVZG-3-N	10.0
8	CUZU-3-N	10.0	8	CUZU-2-N	10.0
9	CUZU-4-N	10.0	9	CUZU-3-N	10.0
10	HP-5N.F	3.0	10	HP-3N.F	10.0

are excluded, where the abbreviations for the compounds are as defined in the application text,

or in that the medium satisfies condition (d)

(d) the modulation medium has, with increasing temperature, a transition from the cholesteric phase into a blue phase (BP) at a temperature  $T(N^*,BP)$ , and in that optionally the dielectric susceptibility of the modulation medium at a temperature of 4 degrees above this transition temperature is 25 or more,

wherein said medium has an enthalpy of clearing of 1.00 J/g or less.

19. (Cancelled):

20. (Currently Amended): A medium ~~Medium~~ according to Claim 19, wherein said medium characterised in that it has an enthalpy of clearing of 0.80 J/g or less.

21. (Currently Amended): A medium ~~Medium~~ according to claim 18, wherein characterised in that the dielectric susceptibility of said the medium at a temperature of 4 degrees above the clearing point or conversion temperature is 40 or more.

22. (Currently Amended): A medium ~~Medium~~ according to Claim 21, wherein

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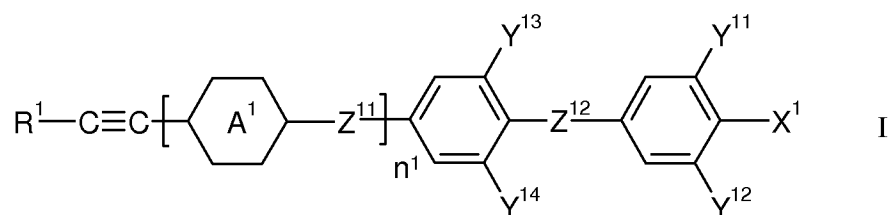
~~characterised in that~~ the dielectric susceptibility of ~~said the~~ medium at a temperature of 4 degrees above the clearing point or conversion temperature is 55 or more.

23. Currently Amended): ~~A medium Medium~~ according to claim 18, wherein said medium characterised in that it has a clearing point or conversion temperature in the range from -30°C to 80°C.

24. Currently Amended): ~~A medium Medium~~ according to Claim 23, wherein said medium characterised in that it has a clearing point or conversion temperature in the range from 0°C to 45°C.

25. (Currently Amended): ~~A medium Medium~~ according to claim 18, wherein characterised in that the optical anisotropy of ~~said the~~ medium at a temperature of 4 degrees below the clearing point or conversion temperature is 0.080 or more.

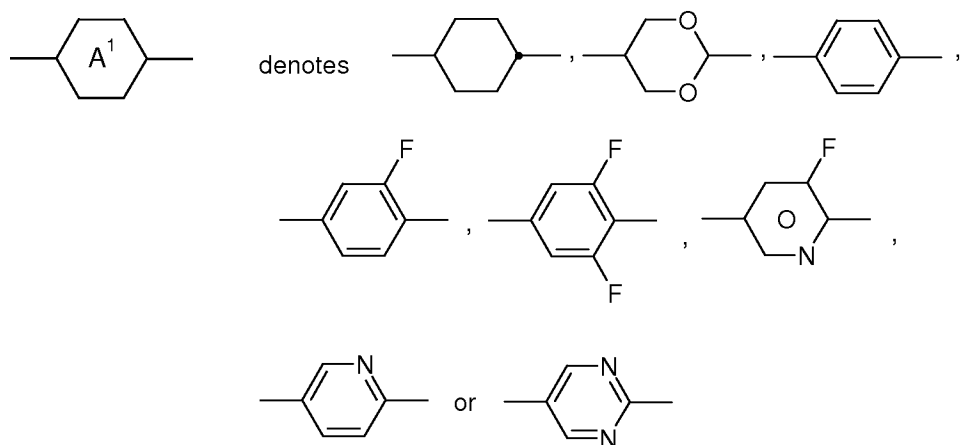
26. (Currently Amended): ~~A medium Medium~~ according to claim 18, wherein said medium characterised in that it comprises one or more compounds selected from formulae of the formula I and II:



wherein in which

R<sup>1</sup> denotes alkyl having 1 to 7 C atoms or oxaalkyl having 2 to 7 C atoms,



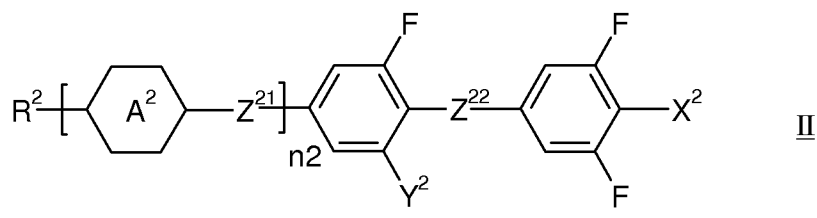


$Z^{11}$  and  $Z^{12}$  each, independently of one another, denote a single bond, -CO-O-, trans -CH=CH-, -CH=CF-, -CF=CH-, -CF=CF-, -CH=CH-CO-O-, -CF=CF-CO-O-, -CF=CH-CO-O-, -CH=CF-CO-O-, -CF<sub>2</sub>-O-, -O-CF<sub>2</sub>-, or -C≡C-, or a combination of two or more of these groups,

$X^1$  denotes F, Cl, NO<sub>2</sub>, -OCF<sub>3</sub>, -CF<sub>3</sub>, -OCF<sub>2</sub>H, Cl, CN, -C≡C-CN or NCS,

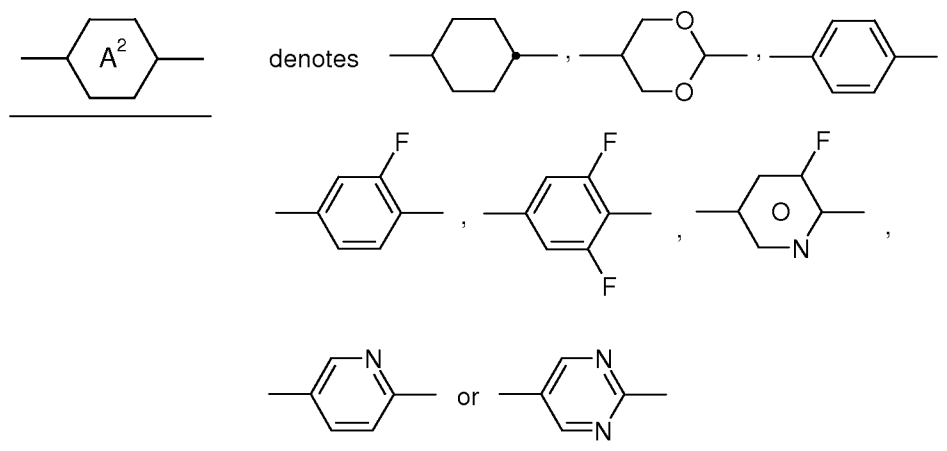
$Y^{11}$ ,  $Y^{12}$ ,  $Y^{13}$  and  $Y^{14}$  each, independently of one another, denote H or F, and

$n^1$  denotes 0 or 1;



wherein in which

$R^2$  denotes alkyl having 1 to 7 C atoms, alkoxy having 1 to 7 C atoms, alkenyl having 2 to 7 C atoms, alkenyloxy having 2 to 7 C atoms, or oxaalkyl having 2 to 7 C atoms,



$Z^{21}$  and  $Z^{22}$  each, independently of one another, denote a single bond,  $-\text{CO}-\text{O}-$ ,  $\text{trans}-\text{CH}=\text{CH}-$ ,  $-\text{CH}=\text{CF}-$ ,  $-\text{CF}=\text{CH}-$ ,  $-\text{CF}=\text{CF}-$ ,  $-\text{CH}=\text{CF}-\text{CO}-\text{O}-$ ,  $-\text{CF}_2-\text{O}-$ ,  $-\text{O}-\text{CF}_2-$ , or  $-\text{C}\equiv\text{C}-\text{U}$ , or a combination of two or more of these groups,

$X^2$  denotes F, Cl,  $\text{NO}_2$ ,  $-\text{OCF}_3$ ,  $-\text{CF}_3$ ,  $-\text{OCF}_2\text{H}$ , Cl, CN,  $-\text{C}\equiv\text{C}-\text{CN}$  or NCS,

$Y^2$  denotes H or F, and

$n^2$  denotes 0 or 1.

27. (Cancelled):

28. (Currently Amended): A medium ~~Medium~~ according to claim 26, characterised in that, besides the compounds of formulae I and/or II, said medium ~~the formula II~~, it comprises one or more further mesogenic compounds.

29. (Currently Amended): A medium ~~Medium~~ according to claim ~~26~~ 18, wherein said ~~characterised in that~~ the medium comprises:

- 5% to 80 of one or more compounds of the formula I, and/or
- 5% to 95% of one or more compounds of the formula II, and ~~and/or~~
- 0% to 30% of one or more further mesogenic compounds.

30. (Currently Amended): A medium ~~Medium~~ according to claim ~~28~~ 27, wherein said medium contains one or more ~~characterised in that, besides the~~ compounds of the formula II, ~~it comprises one or more further mesogenic compounds.~~

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31. (New): A light modulation element according to claim 7, wherein said medium contains one or more compounds of formula I.

32. (New): A light modulation element according to claim 7, wherein said medium contains one or more compounds of formula II.

33. (New): A light modulation element according to claim 10, wherein said mesogenic modulation medium comprises:

- 5% to 80 of one or more compounds of the formula I,
- 5% to 95% of one or more compounds of the formula II, and
- 0% to 30% of one or more further mesogenic compounds.

34. (New): A light modulation element according to claim 26, wherein said medium contains one or more compounds of formula I.

35. (New): A light modulation element according to claim 26, wherein said medium contains one or more compounds of formula II.

36. (New): A medium according to claim 29, wherein said medium comprises:

- 5% to 80 of one or more compounds of the formula I,
- 5% to 95% of one or more compounds of the formula II,
- 0% to 30% of one or more further mesogenic compounds.

37. (New): A light modulation element according to claim 1, wherein said modulation medium has, with increasing temperature, a transition from the nematic phase or from the cholesteric phase into the isotropic phase, the enthalpy of clearing of said modulation medium is 1.00 J/g or less, the dielectric susceptibility of said modulation medium is 40 or more, and the optical anisotropy of said modulation medium at a temperature of 4° below the clearing point is 0.090 or more.

38. (New): A light modulation element according to claim 1, wherein said modulation medium has, with increasing temperature, a transition from the nematic phase or from the cholesteric phase into the isotropic phase, and the birefringence ( $\Delta n$ ) of said modulation medium, in the nematic phase at a temperature of 4 degrees below the clearing point, is 0.200 or more.

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39. (New): A light modulation element according to claim 1, wherein said modulation medium has a dipole moment of 4 debyes or more.

40. (New): A light modulation element according to claim 1, wherein said modulation medium has a dielectric anisotropy of 15 or more.

41. (New): A light modulation element according to claim 1, wherein said modulation medium has a dielectric anisotropy of -5 or less.